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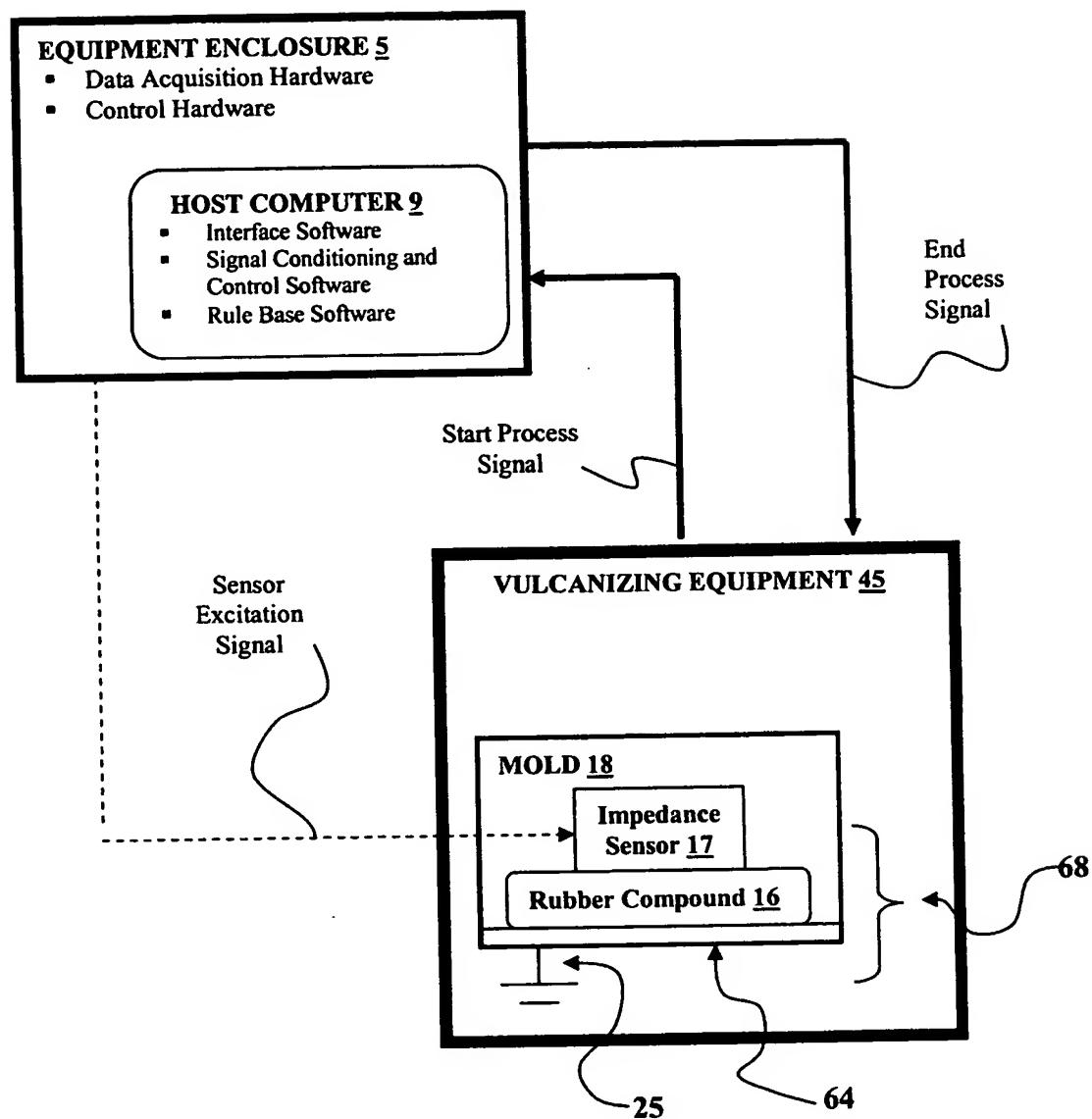
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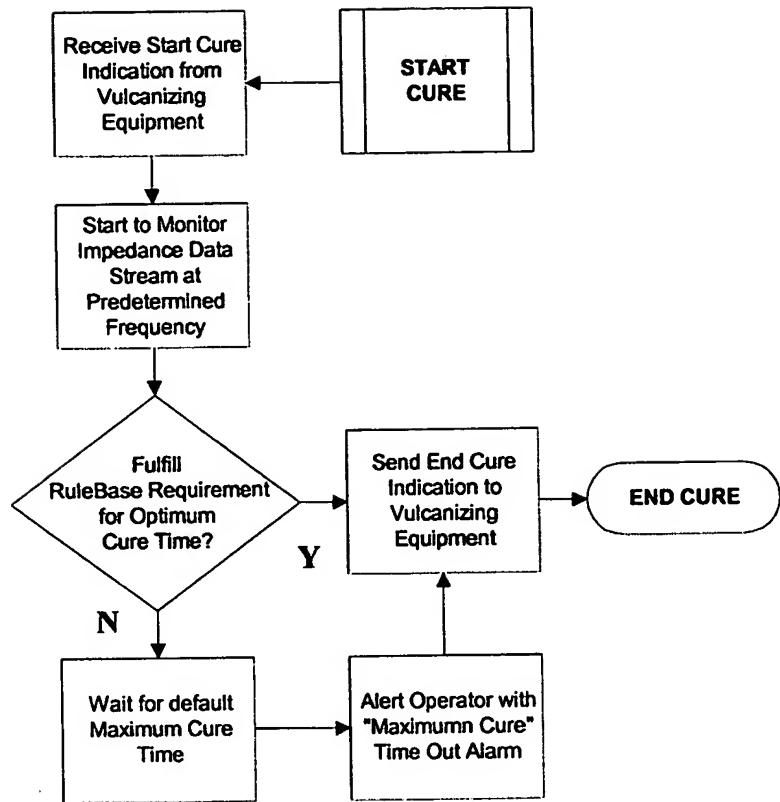
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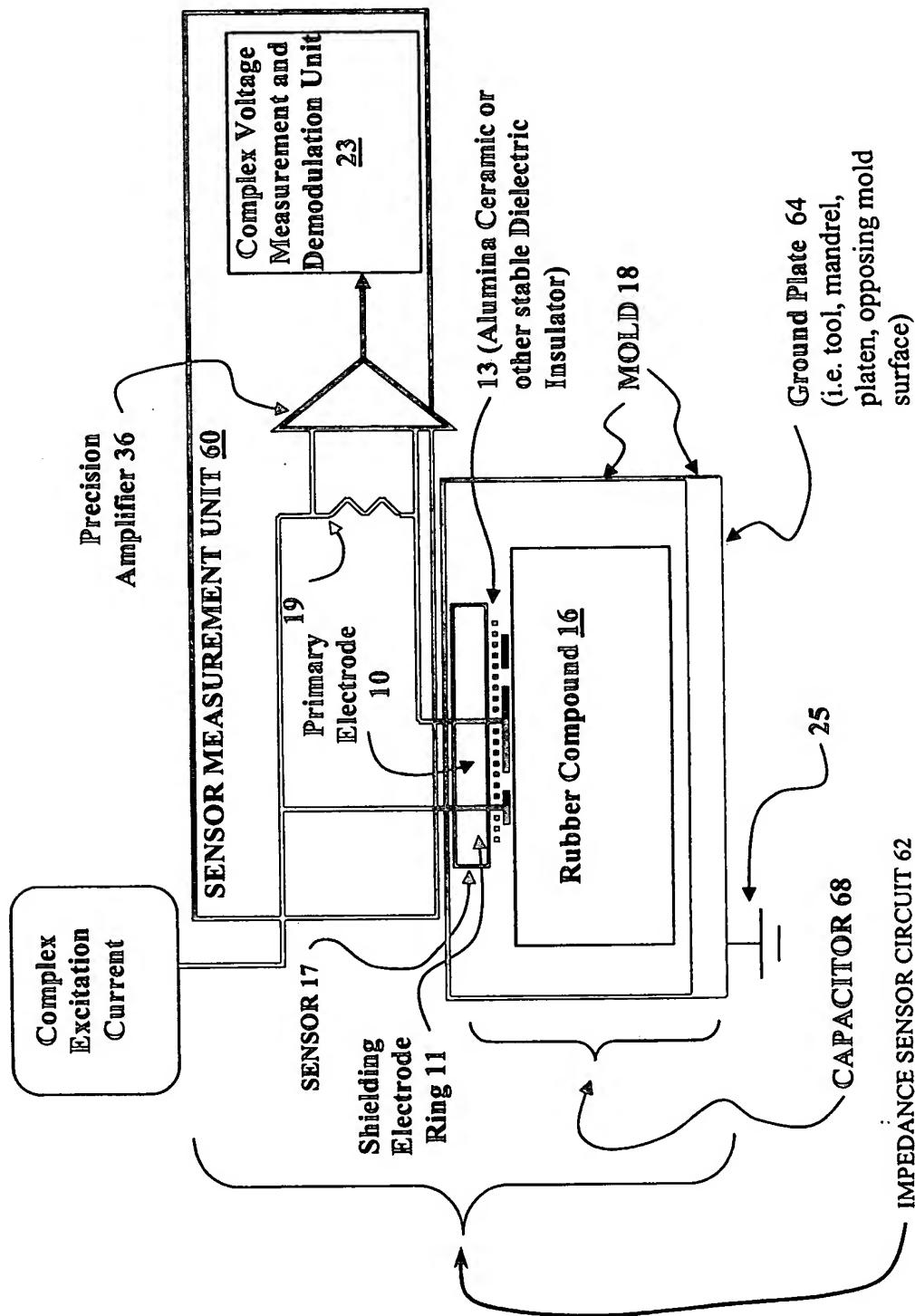
**FIG. 1**



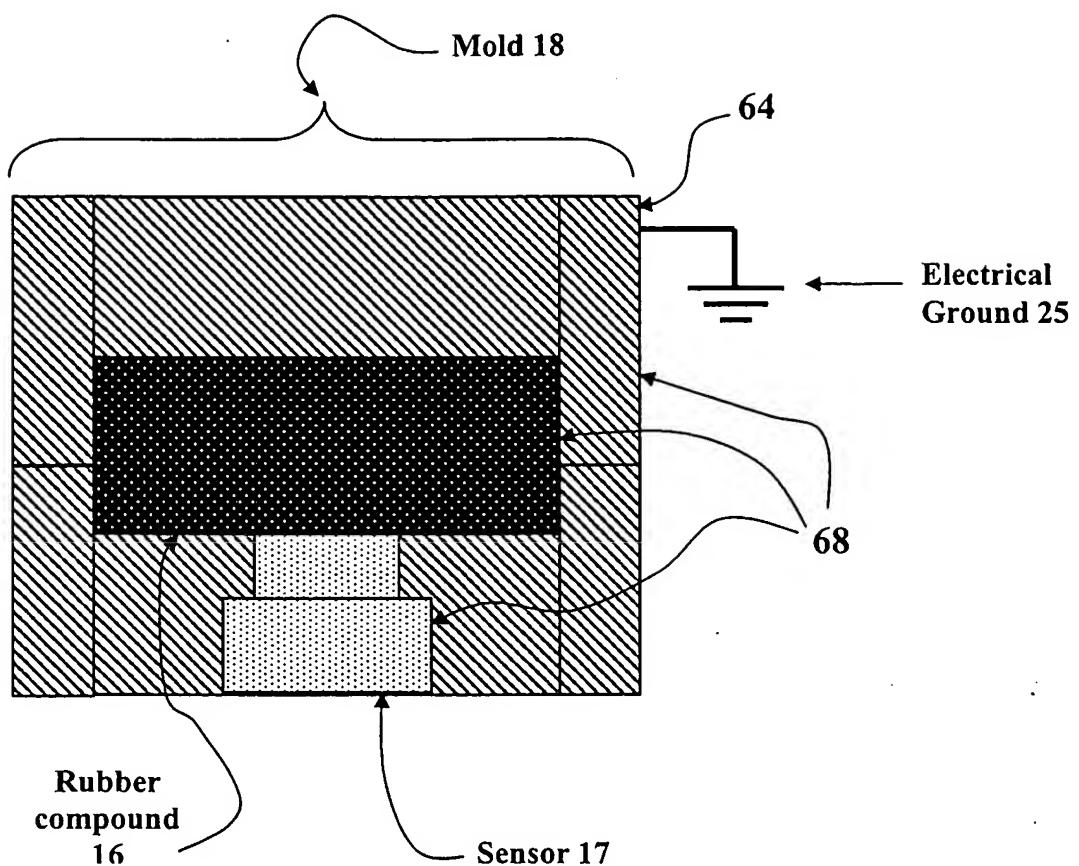
**FIG. 2**



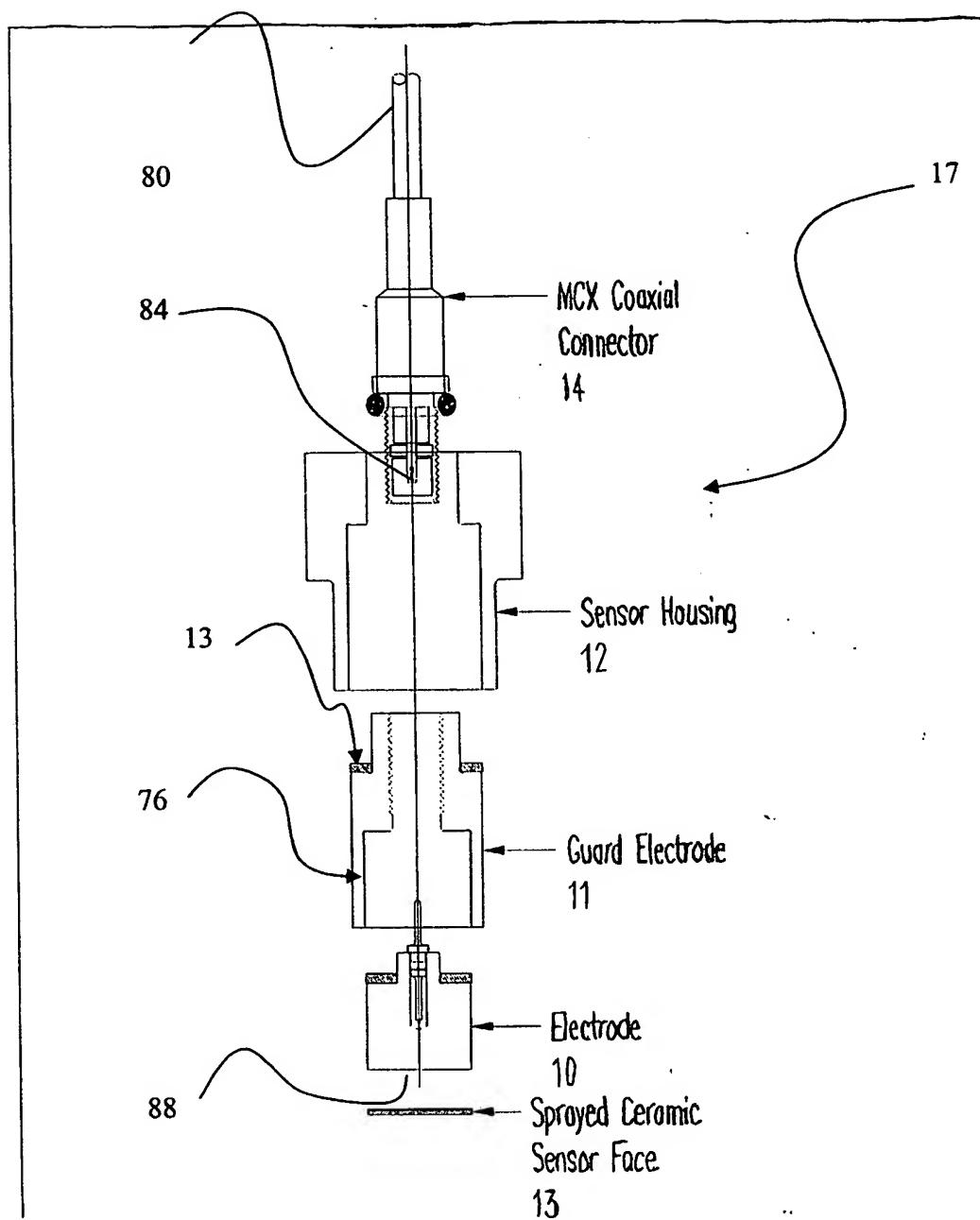
**FIG. 3**



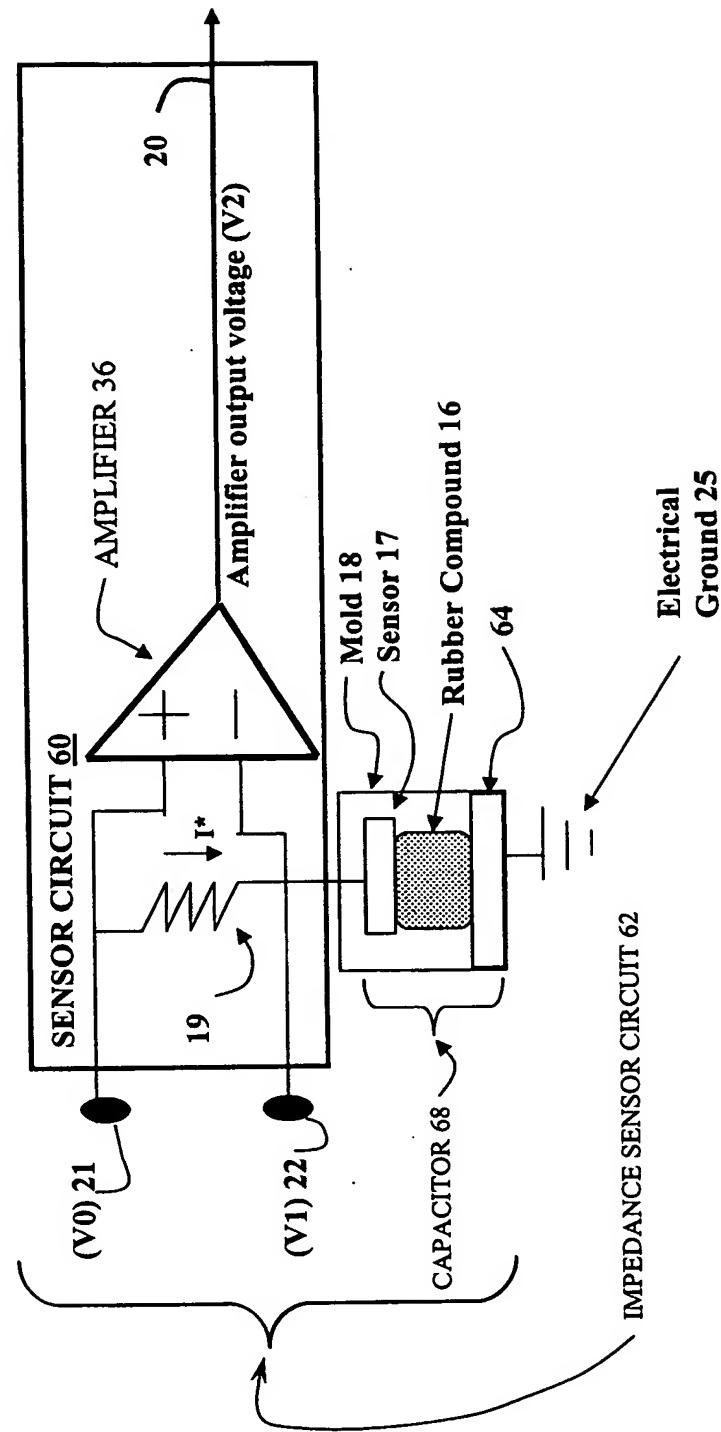
**FIG. 4**



**FIG. 5**

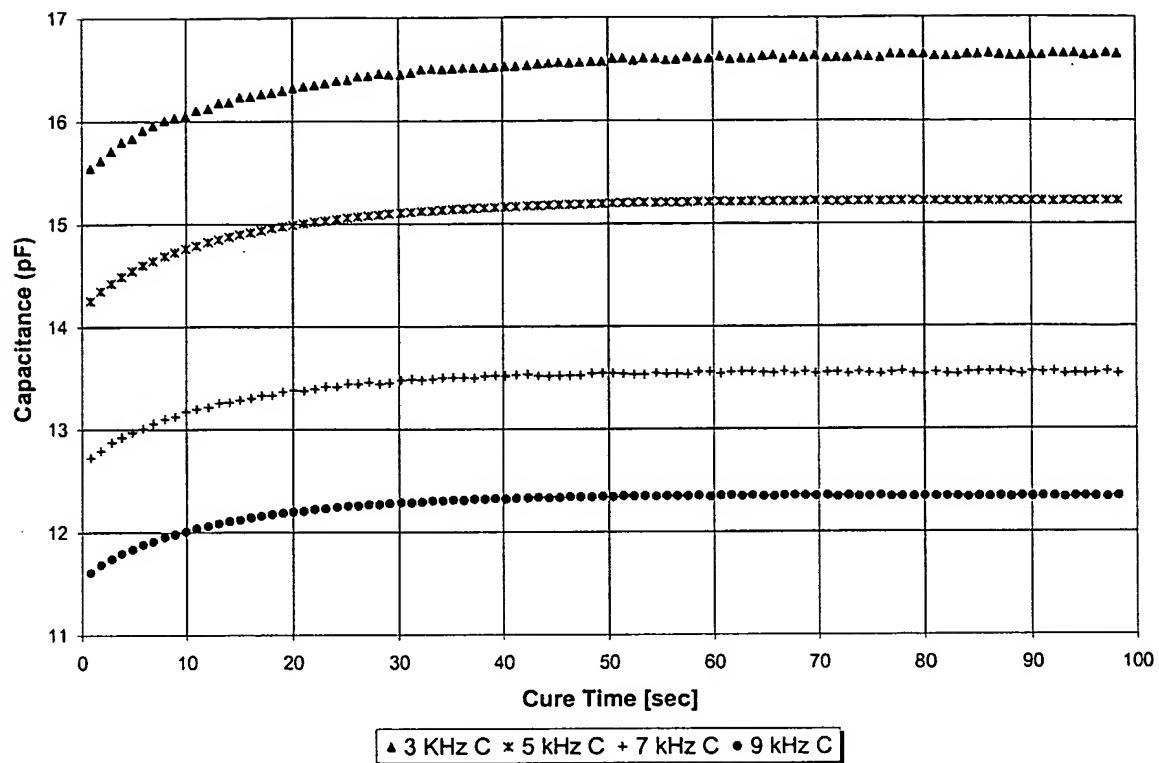


**FIG. 6**

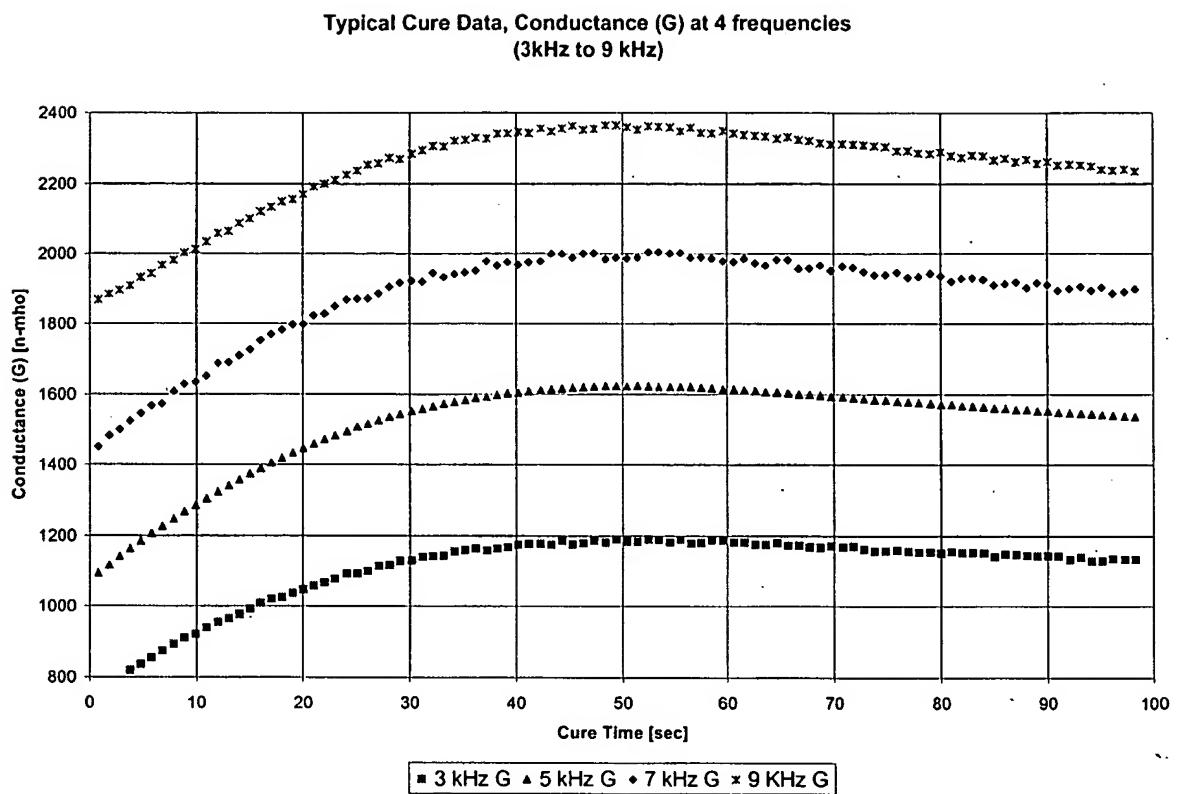


# FIG. 7

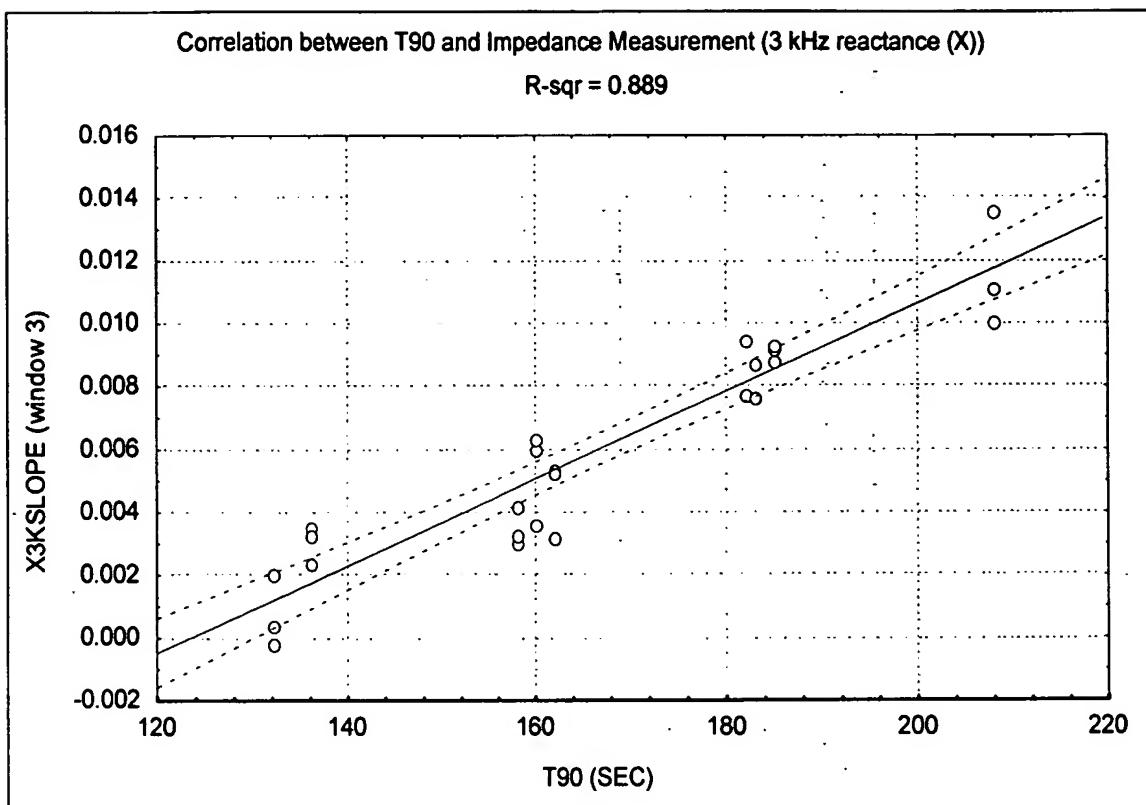
Typical Cure Data, Capacitance (C) at 4 frequencies  
(3kHz to 9 kHz)



**FIG. 8**



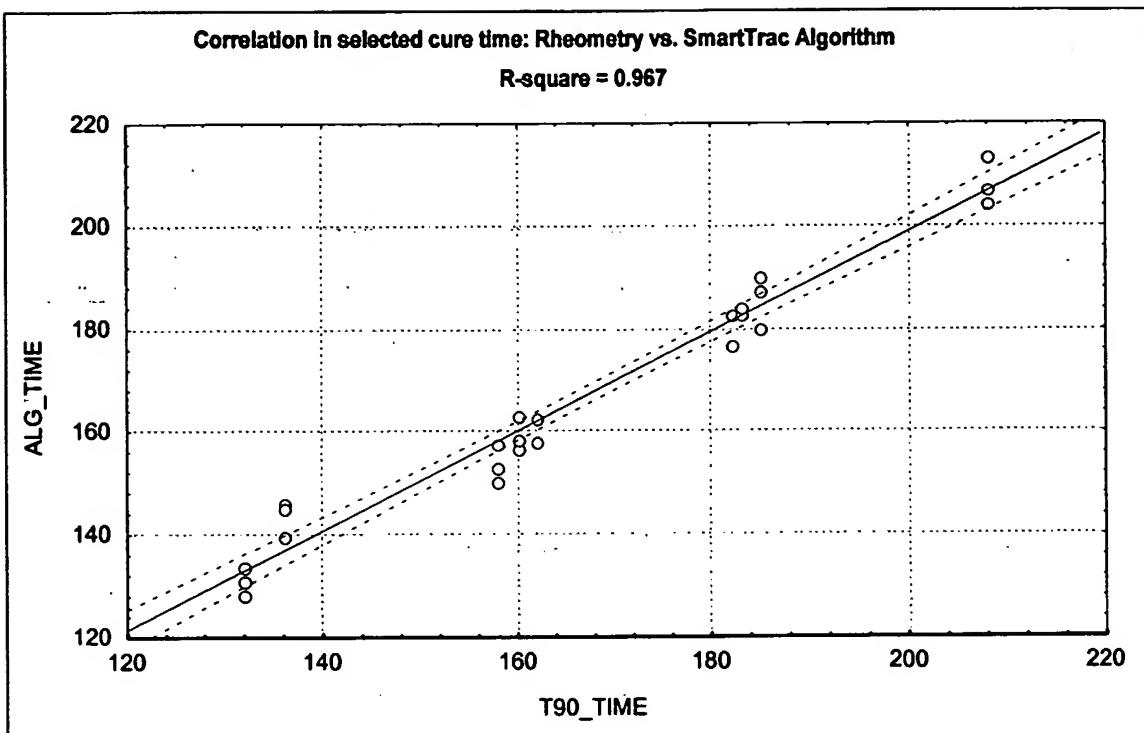
**FIG. 9**



**LEGEND:**

- Data Point: coordinates being (for a given curing condition): Evaluator 6 determined time, and a corresponding rheometrically determined cure time.
- Best Fit through the Data Points
- - - 95% Confidence Intervals

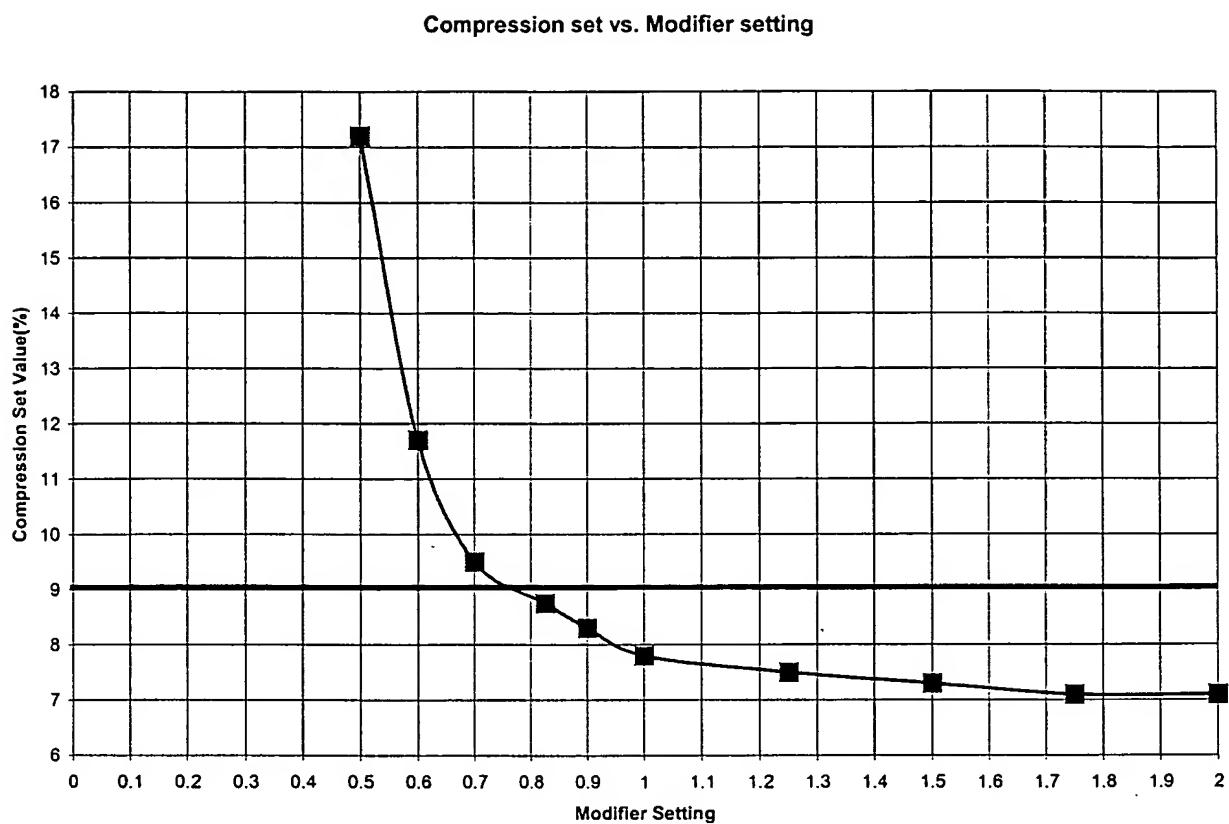
**FIG. 10**



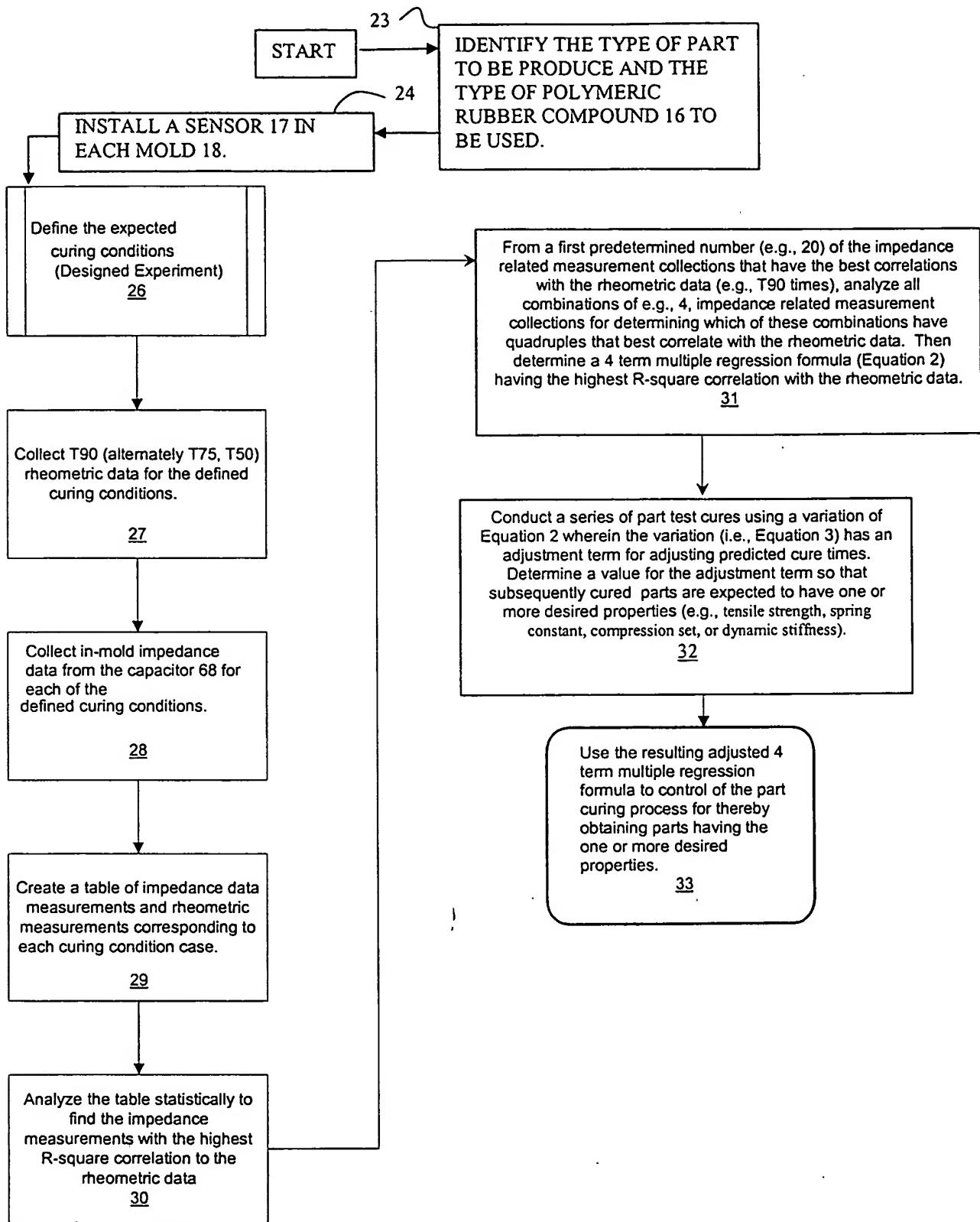
**LEGEND:**

- Data Point: coordinates being (for a given curing condition): a determined time from a selected four-term multiple regression instance of Equation 2, and a corresponding rheometrically determined cure time.
- Best Fit through the Data Points
- - - 95% Confidence Intervals

**FIG. 11**



**FIG. 12**



**FIG. 13**

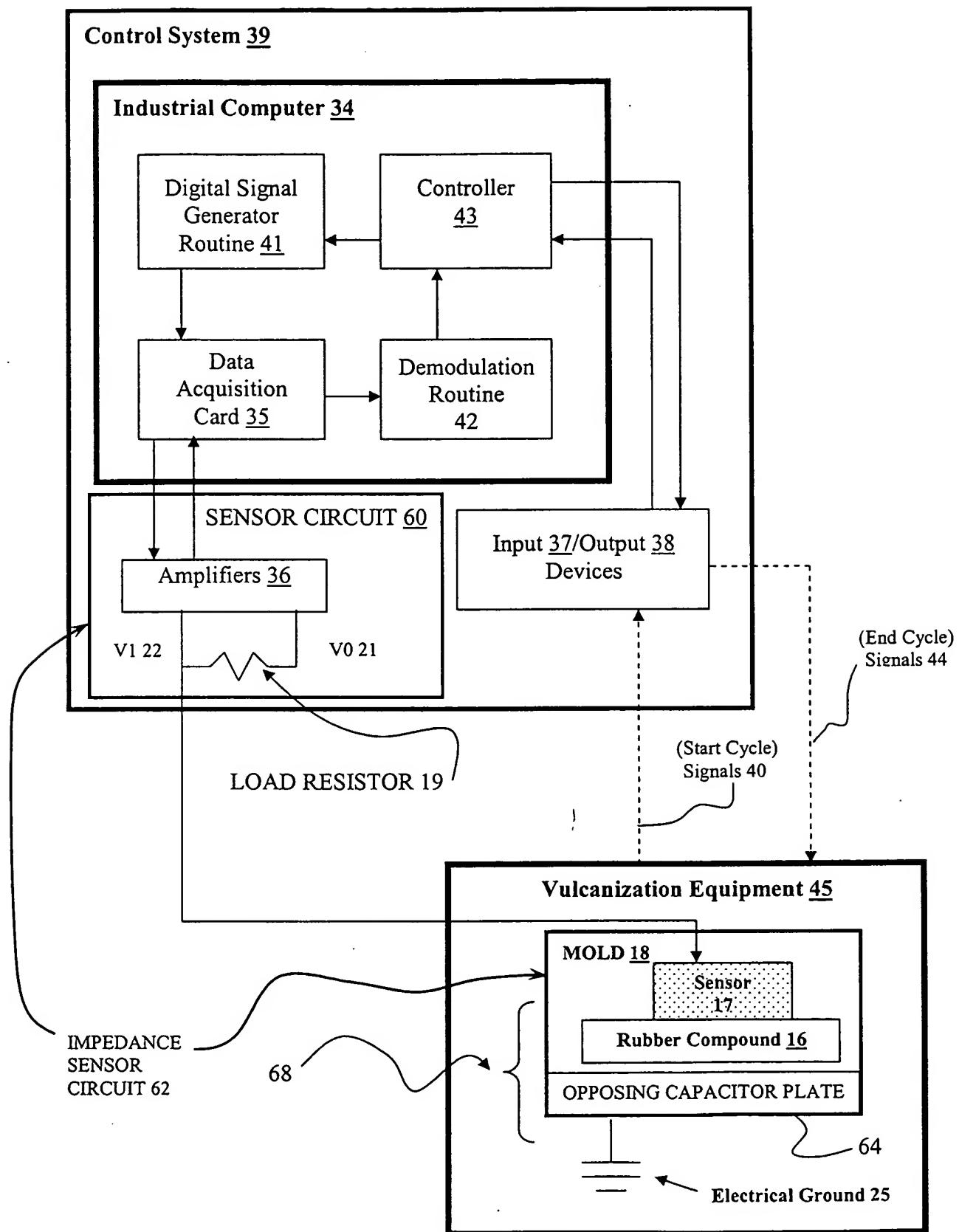
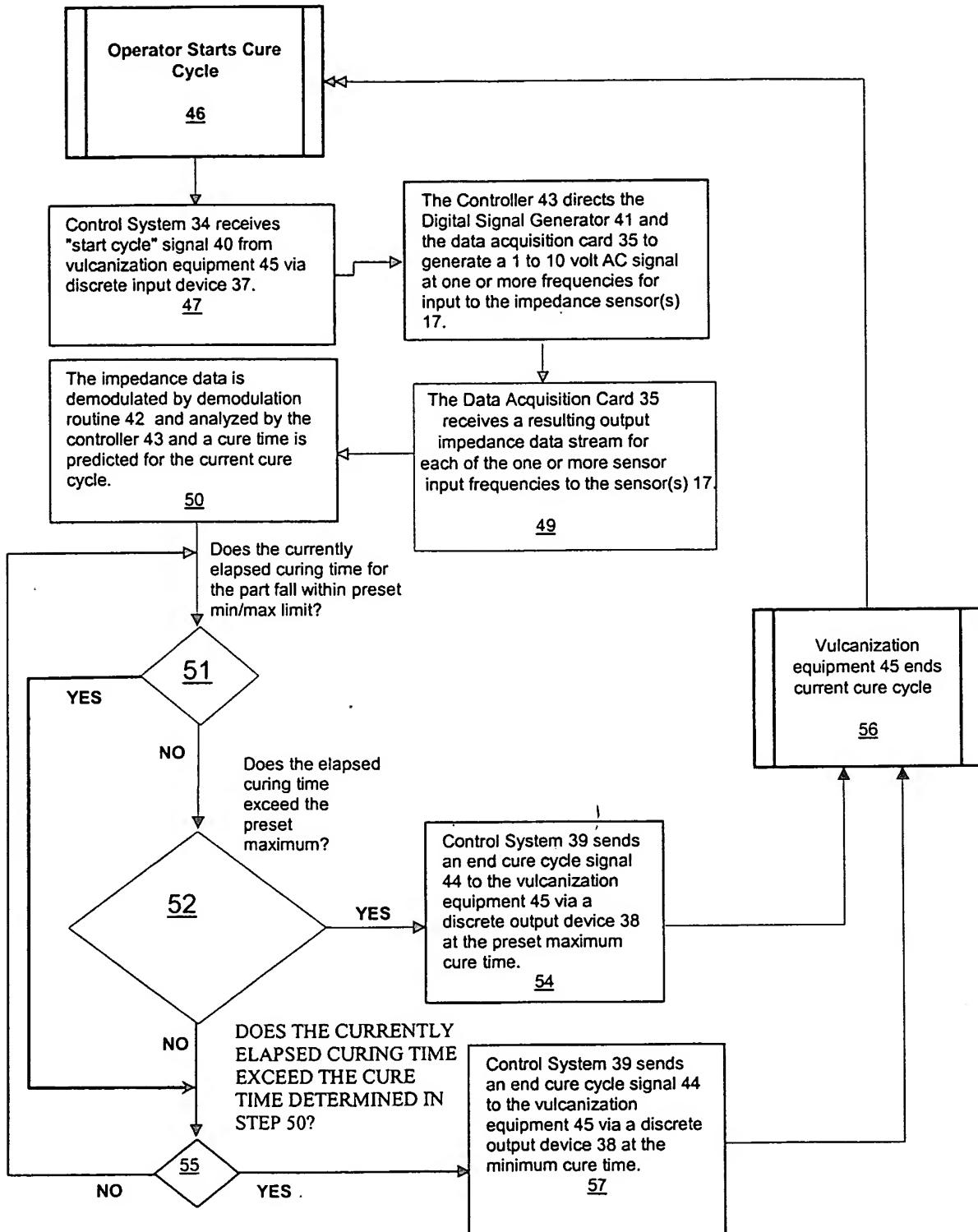
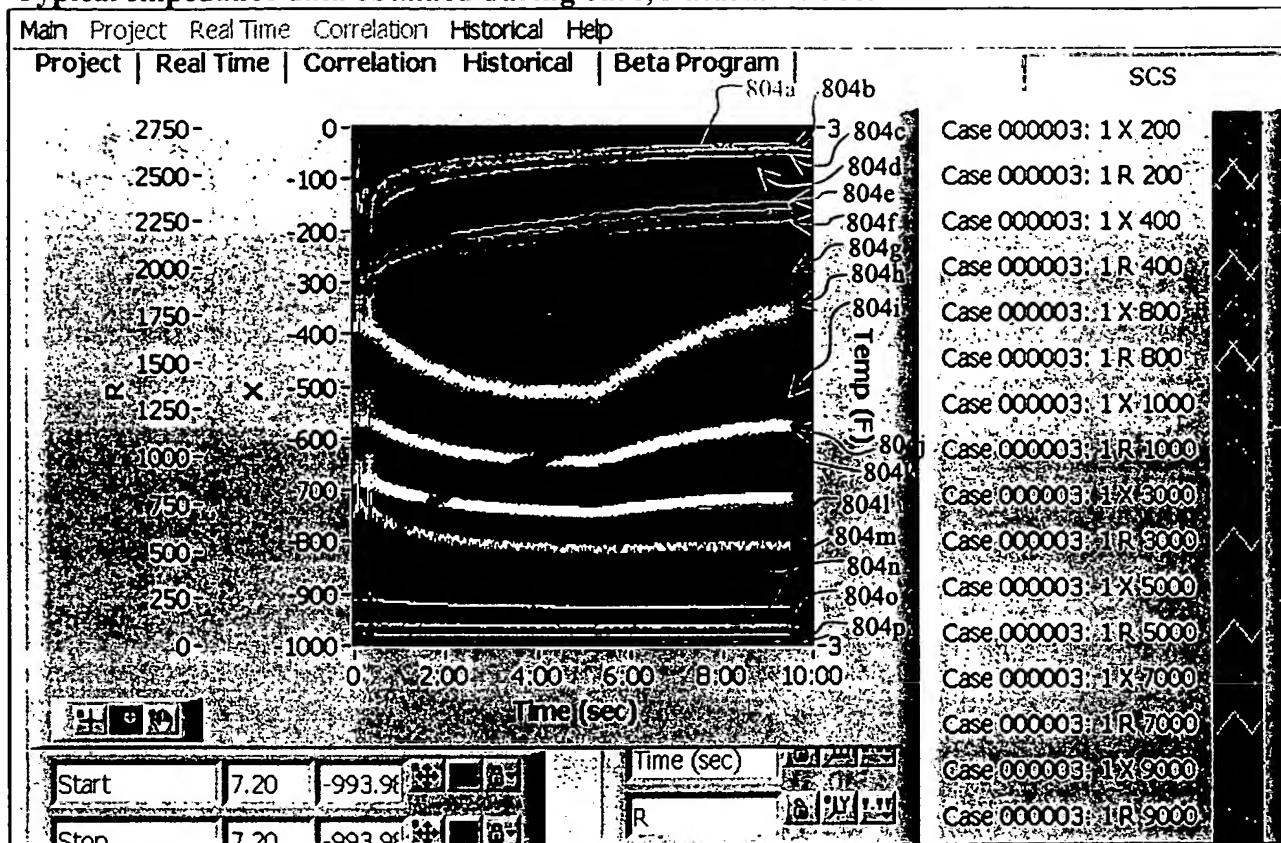


FIG. 14



# Fig. 15

Typical Impedance data obtained during cure, Natural Rubber

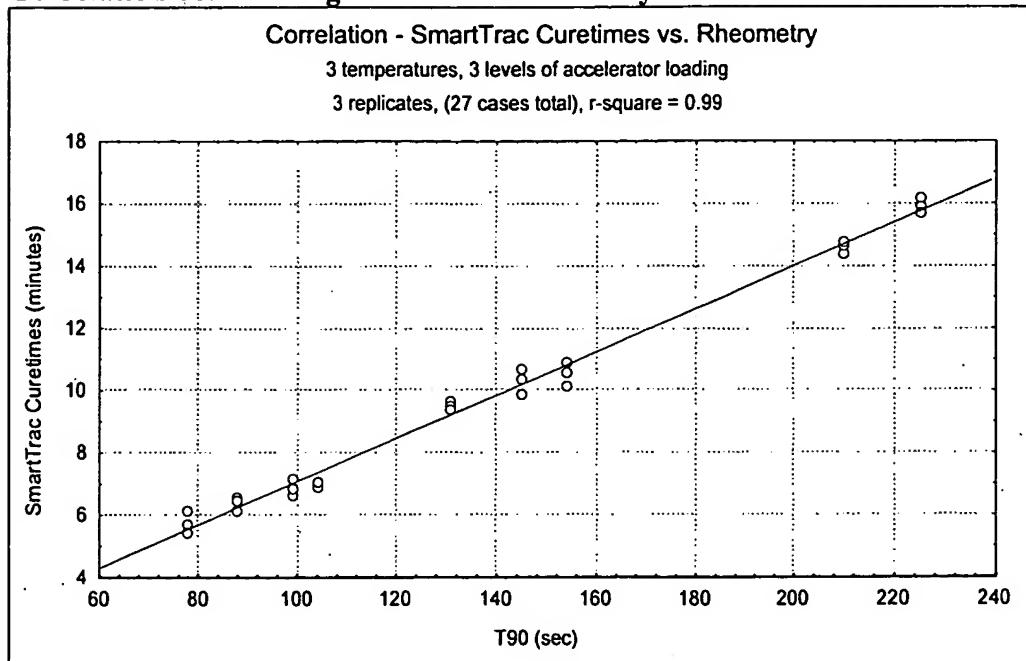


**Fig. 16**  
**Conditions and Rheometry for Natural Rubber Designed Experiment**

temperature (deg C)	accelerator loading	T90 (sec)
165	low	225
175	low	112
185	low	99
165	nominal	210
175	nominal	131
185	nominal	83
165	high	154
175	high	904
185	high	78

## Fig. 17

### Correlation between Algorithm and Rheometry within Natural Rubber Designed Experiment



#### LEGEND:

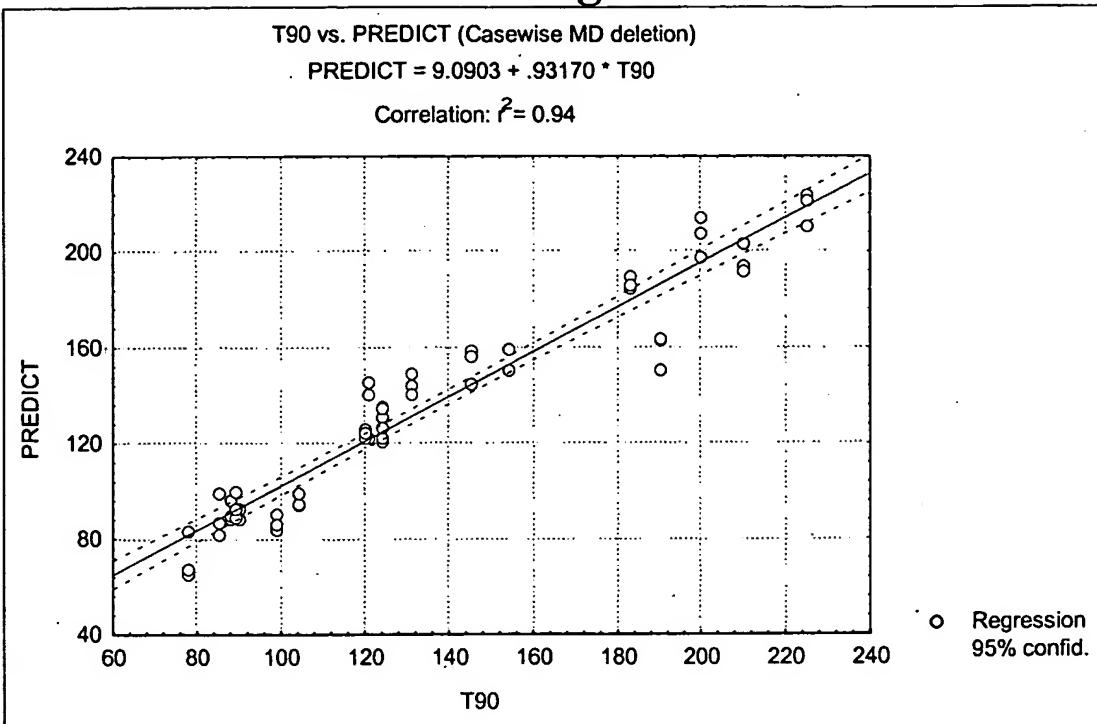
- Data Point: coordinates being for (a given curing condition): a determined time from a selected four-term multiple regression instance of Equation 3, and a corresponding rheometrically determined cure time.
- Best Fit through the Data Points
- 95% Confidence Intervals

## Fig. 18

### Conditions and Rheometry for Broad Sampling of Natural Rubber Batches

Batch ID	Cure Characteristic	Hardness	Temp (C)	T90 (sec)
AA22120-1	slow curing	nominal	165	225
AA22120-1	slow curing	nominal	175	144.6
AA22120-1	slow curing	nominal	185	99
AA22120-3	optimized production	nominal-production	165	112.2
AA22120-3	nominal-production	nominal-production	175	111.7
AA22120-3	nominal-production	nominal-production	185	99.1
AA32120-1	fast curing	nominal	165	153.6
AA32120-1	fast curing	nominal	175	103.8
AA32120-1	fast curing	nominal	185	78
AA12189-1	nominal	soft	165	189.6
AA12189-1	nominal	soft	175	123.6
AA12189-1	nominal	hard	185	88.2
AA12120-15	nominal-production	nominal-production	165	143.8
AA12120-15	nominal-production	nominal-production	175	131.7
AA12120-15	nominal-production	nominal-production	185	84.4
AA12120-23	nominal-production	nominal-production	175	120

**Fig. 19**



**LEGEND:**

- Data Point: coordinates being (for a given curing condition): a determined time from a selected four-term multiple regression instance of Equation 3 for natural rubber, and a corresponding rheometrically determined cure time.
- Best Fit through the Data Points
- - - 95% Confidence Intervals

**Fig. 20**

BATCH IDENTIFIER	TEMPERATURE		
	165 C	175 C	180 C
AA22120-1 slow curing	6 samples 11:10 (predicted cure time)	6 samples 8:10 (predicted cure time)	
AA12120-57 production batch	4 samples 10:46 (predicted cure time)	7 samples 7:52 (predicted cure time)	
AA12120-58 production batch		6 samples 7:56 (predicted cure time)	8 samples 7:05 (predicted cure time)
AA32120-1 fast curing	7 samples 9:11 (predicted cure time)	5 samples 7:13 (predicted cure time)	8 samples 6:09 (predicted cure time)